Onkar S. Dhande

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Education

2004 – 2011 **Ph.D.**, Developmental Biology, *Baylor College of Medicine*, Houston, TX
Advisor: Michael C. Crair

2000 – 2004 **B.S.**, Biomedical Engineering, *Case Western Reserve University*, Cleveland, OH

Research Experience

July 2018 – present **Research Scholar,** Neurobiology and Ophthalmology
Stanford University School of Medicine, Stanford, CA
Advisors: Andrew D. Huberman and Yang Sun

Sept. 2011 – June 2018 **Postdoctoral Scholar,** Neurobiology
Stanford University School of Medicine, Stanford, CA
Advisor: Andrew D. Huberman

Jan. 2007 – Aug. 2011 **Visiting Graduate Student**, Neuroscience
Yale University School of Medicine, New Haven, CT
Advisor: Michael C. Crair

Research Publications (*In progress*)

1. **Dhande O.S.**‡, Seabrook, T.A., Phan A.H., Salay L.D., Ishiko N., Nguyen P.L., Wang, J.T., Evans, S. and Huberman A.D. (2018) Tbx20 is required for the functional assembly of visual Circuits controlling pupil dynamics. (‡ *co-corresponding author*) (*Under review at Cell Reports*)

Research Publications (*Peer reviewed*, in reverse chronological order)

1. **Dhande O.S.** ‡, Stafford B.K., Franke K., El-Danaf R., Percival, K.A., Phan A.H., Li P., Hansen B.J., Nguyen P.L., Berens P., Taylor, W.R., Euler, T., Callaway E.M., and Huberman, A.D. (2018) Molecular fingerprinting of On-Off direction selective retinal ganglion cells across species and relevance to primate visual circuits. **Journal of Neuroscience** (10.1523/JNEUROSCI.1784-18.2018)

2. Seabrook, T.A., **Dhande O.S.**, Ishiko I., Wooley V.P., Nguyen P.L., and Huberman A.D. (2017) Strict independence of parallel and poly-synaptic axon-target matching during visual reflex circuit assembly. **Cell Reports** 21:3049-3069. (*Cover article)*

3. Tang J.C.Y., Rudolph S., **Dhande O.S.,** Lapan S., Drohkylansky E., Huberman A.D., Regehr W.G. and Cepko C.L. (2015) Cell type-specific manipulation with GFP-dependent Cre recombinase. **Nature Neuroscience** 18:1334-41.

4. Sun L.O., Brady C.M., Cahill H., Sakuta H., **Dhande O.S.,** Noda M., Huberman A.D., Nathans J. and Kolodkin A.L. (2015) Functional assembly of accessory optic system circuitry critical for compensatory eye movements. **Neuron** 86:971-84. (*Featured article*)

5. Cruz-Martin A., El-Danaf R.N., Osakada F., Sriram B., **Dhande O.S.**, Nguyen P.L., Callaway E.M., Ghosh A. and Huberman A.D. (2014) A dedicated circuit linking direction selective retinal ganglion cells to primary visual cortex. **Nature** 507:358-61.
(*"Recommended" on Faculty of 1000* & *Cover article*)

6. **Dhande O.S.***, Estevez M.E.*, Quattrochi L.E., El-Danaf R.N., Nguyen P.L., Berson D.M. and Huberman A.D. (2013) Genetic dissection of retinal inputs to brainstem nuclei controlling image stabilization. **Journal of Neuroscience** 33: 17797-813. (*Featured in "This Week in the Journal"*)

7. **Dhande O.S.**, Bhatt S., Anishchenko A., Elstrott J., Iwasato T., Swindell E., Xu H.P., Jamrich M., Itohara S., Feller M.B. and Crair M.C. (2012) Role of adenylate cyclase 1 in retinofugal map development. **Journal of Comparative Neurology** 520:1562-83.
(*"Recommended" on Faculty of 1000*)

8. **Dhande O.S.** and Crair M.C. (2011) Transfection of murine retinal ganglion cells by *in vivo* electroporation. **Journal of Visualized Experiments** 50.

9. **Dhande O.S.**, Hua E.W., Guh E., Yeh J., Bhatt S., Zhang Y., Ruthazer E.S., Feller M.B. and Crair M.C. (2011) Development of single retinofugal axon arbors in normal and ß2 knockout mice. **Journal of Neuroscience** 31: 3384-99. (*"Recommended" on Faculty of 1000*)

10. Plas D.T.*, **Dhande O.S.***, Lopez J.E., Murali D., Thaller C., Furuta Y., Overbeek P. and Crair M.C. (2008) Bone morphogenetic proteins, eye patterning, and retinocollicular map formation in the mouse. **Journal of Neuroscience** 28: 7057-67. (* *contributed equally*)

Review Articles

1. **Dhande O.S.**[‡]**,** Stafford B.K., Lim J.H.A., and Huberman A.D. (2015) Contributions of retinal ganglion cells to subcortical visual processing and behaviors. **Annual Review of Vision Science** 1: 291-328.

2. **Dhande O.S**[‡], and Huberman A.D. (2014) Visual circuits: mouse retina no longer a level playing field. **Current Biology** 24: R155-6.

3. **Dhande O.S.**[‡] and Huberman A.D. (2014) Retinal ganglion cell maps in the brain: implications for visual processing. **Current Opinion in Neurobiology** 24: 33-142.

4. Zhang J., Ackman J., **Dhande O.S.** and Crair M.C. (2011) Visualization and manipulation of neural activity in the developing vertebrate nervous system. **Frontiers in Molecular Neuroscience** 17:50.

Selected Invited Talks

Postdoc:

1. "Genetic control over connectivity and function of parallel visual pathways",
Department of Ophthalmology, Vision Series, Stanford University School of Medicine, Sept. 2018

2. "Molecular and functional approaches to understanding parallel optic pathways",
Department of Ophthalmology and Visual Science, Yale University School of Medicine, July 2018

3. "Connecting the eye to the brain: understanding from genes, circuits and behavior", Proneurotech Inc., San Francisco, June 2018

4. "Developmental mechanisms for establishing functional non-image-forming visual circuits", Association for Research in Vision and Ophthalmology, May 2017.

5. "Evolution of visual circuits for detecting directional motion", Neuroscience Club, University of California, Santa Cruz, February 2017

6. "Molecular and Functional Approaches to Understanding Visual Circuit Evolution", FASEB Retinal Neurobiology and Visual Processing, Keystone, July 2016

7. "Parsing parallel optic pathways in the primates: a molecular approach", Centre for Integrative Neuroscience, University of Tübingen, Germany, April 2016

8. "Genetic parsing of cells and circuits for image stabilization", International Society for Eye Research, San Francisco, July 2014

Graduate Student:
1. "Activity-dependent mechanisms governing retinotopic map refinement". Department of Molecular and Cellular Biology, Harvard University, March 2011

2. "Adenylate Cyclase 1 is required for activity-dependent retinocollicular map refinement", Gordon Research Conference on Visual System Development, Lucca, Italy, May 2010

3. "Activity-dependent mechanisms of retinotopic map refinement", Department of Neurobiology Seminar Series, Yale University School of Medicine, June 2009

Grants
Knights Templar Eye Foundation Pediatric Ophthalmology Career Starter Grant 2012-14

Awards
Ramon Dacheux II Memorial Travel Grant, ARVO Foundation (2017)
Allison Doupe Fellowship, McKnight Foundation (2016)
National Eye Institute Audacious Goals Initiative Panel Discussion Travel Award (2015)
International Society for Eye Research Travel Fellowship (2014)
Whitaker Foundation Undergraduate Research Fellowship (2003)

Grant Review
Fight for Sight Foundation, French National Research Agency, Italian Ministry of Health, and Belgian Public Research Council (FWO)

Manuscript Review
Cell Reports, Journal of Comparative Neurology, Investigative Ophthalmology & Visual Science, Behavioral Brain Research, Frontiers of Information Technology & Electronic Engineering, and Protein & Cell

Ad Hoc Reviewer: Journal of Neuroscience, Neuron, Nature Neuroscience, Current Biology, Cell, Current Opinion in Neurobiology, Nature, and Elife

Teaching Experience

1. Co-Instructor (2017) and Teaching Assistant (2015, 2013): Cold Spring Harbor Laboratory advanced course on "Vision: a platform for linking circuits, perception and behavior"

2. Designed and taught the following classes for the *Splash!* Stanford high school outreach program
   - What is sex? Biology, sex and gender (Spring 2017, Fall 2017*)*
   - The Eye in Illusions (Fall 2017)

3. Co-Instructor: Neuroanatomy Module, UCSD Neuroscience Graduate Program Boot Camp, 2014

4. Research mentor for Undergraduate Senior Theses & Fellowships:

Edmond Yaghoubian, UCSD '16	Ann Pham, UCSD '15
Shivani Bhatt, Yale '13	Jonathan Yeh, Yale '12
Maggie Chun, Mount Holyoke College '09	Emily Guh, Yale '09

Special Courses

2017 Participant, Stem Cells: Regeneration Methods for the Visual System, Hands-On Workshop, Foundation for Advanced Education in the Sciences at NIH

Professional Memberships and Leadership Activities

2005 – present Society for Neuroscience
2012 – 2015 Organizer, "Sensory Circuits Journal Club", University of California San Diego

References

1. Andrew D. Huberman
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Dept. of Neurobiology
Stanford University School of Medicine
Email: adh1@stanford.edu
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2. Michael C. Crair
Professor & Deputy Dean Scientific Affairs
Dept. of Neuroscience
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3. William Guido
Professor & Chair
Dept. of Anatomical Sciences & Neurobiology
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4. David M. Berson
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